



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/927,323	08/13/2001	Mikio Kondo	212464US0X CIP	5148
22850	7590	04/14/2005	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			MAI, NGOC LAN THI	
			ART UNIT	PAPER NUMBER
			1742	
DATE MAILED: 04/14/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/927,323

Applicant(s)

KONDO ET AL.

Examiner

Ngoclan T. Mai

Art Unit

1742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 4/28/03, 5/28/04, 8/20/04
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-4, 7, 9, 10, 14, and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by JP09272901 (translation attached)

JP discloses a powder molding method where a die surface of a molding die is heated to a temperature in the range of 150-400 C and coated with a lubricant (page 6, [0017]). The molding powder, which was also heated to 150-400 C, is then filled into the cavity of the molding die and compression-molded to form a green compact. The lubricant disclosed can be zinc stearate based lubricants, which can be dispersed or dissolved in solvent such as water, see page 6 [0016]. Note that zinc stearate is a salt of stearic acid, which is higher fatty acid as disclosed by the applicant (page 8, lines 8-11 of the specification). The pressure for molding the green compact disclosed is set at 7 ton/cm² or 686 MPA, see page 10 [0033] and page 13 [0043].

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP09272901 in view of Koenig et al (5,191,098) and Inculet et al (CA 2,156,872).

JP09272901 teaches the method substantially as claimed. JP09272901, however, does not teach dispersing the lubricant in water that contains a surfactant as recited in instant claim 5 or the particle size of the higher fatty acid lubricant being less than 30 microns as recited in instant claim 6.

Koenig et al teaches aqueous dispersions generally comprise the metal soap, i.e., insoluble metal salts of organic acid, water and dispersing agents for the metal soap, and that the dispersing agent is generally a surfactant or mixture of surfactants (col. 1, lines 9-15).

Therefore, it would have been obvious to one of ordinary skill in the art to have utilized dispersion agent as taught by Koenig in the process of making aqueous dispersion of lubricant of JP09272901, since the use of dispersing agent as taught by Koenig would facilitate the dispersion of the metal salts of organic acid of JP09272901.

Regarding claim 6, Inculet et al. teaches that solid lubricant employed in coating the wall surfaces of the die can have particle size of 15 microns or less (page 6, lines 8-15).

Therefore, it would have been obvious to one of ordinary skill in the art to have utilized solid lubricant having particle size as taught by Inculet et al. in the dispersion of JP09272901 since the use of lubricant having particle size taught by Inculet et al would lead to the success of the coating of the lubricant of JP09272901 on the wall surfaces.

5. Claims 1-3, 7-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inculet et al., (CA 2156872) in view of Cadle et al. (US 6,190,605).

Inculet et al. discloses a method for forming a powder compact comprising applying a higher fatty acid lubricant to an inner surface of a die, filling the die with metal powder and compacting the powder under pressure. The lubricated die disclosed can be made by electrostatically spraying lubricants in either dry or liquid form of fine liquid droplets or solid particles of 15 microns or less onto the surface of the die (page 3, lines 25-36, and page 6, lines 8-16). The solid lubricant disclosed can be metal salt of higher fatty acids such as zinc stearate, lithium stearate and calcium stearate (page. 7, lines 23-25) can be ejected onto the wall surfaces by dispersing in a dispersant, which generally contain a surfactant (page. 8, lines 18-22). The metal powder disclosed can be iron powder which can also be preheated and contain lubricants such as Zn stearate in the amount of 0.1 to 0.4 wt.% of the (page 8, lines 34-37, page 5, lines 4-9 and page

10, line 37 to page 11, line 6 and Table 1). The compacting pressure disclosed is between 30 to 60 tsi which is 463 to 926 MPa (page 11, lines 20-22).

Inculet et al., however does not specifically teaches spraying the lubricant onto a die that is preheated and particularly to temperature of 100 C or higher as recited in instant claims 7, 14, 17 and 18.

Cadle et al teaches a method for achieving an increased length and density product by powder metallurgy where lubricant is sprayed onto temperature controlled mold walls (see abstract). The mold walls as disclosed was preheated to a temperature between the softening point and melting points of the lubricant before spraying with the lubricant (col. 3, line 55-62). Cadle et al also teaches wet spraying, i.e., spraying dispersion solution of lubricant onto a heated die wall (col. 3, lines 16-21).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the lubricated die of Inculet et al be formed by spraying the lubricant onto the inner wall of the die whose surfaces have been preheated as taught by Cadle et al. since doing this would lead to the consistency of the product and/or product being produced in shorter run as taught by Cadle et al.

In view of Cadle et al teachings, it would also be obvious to preheat the inner wall surfaces of the die of Inculet et al to a temperature below the melting point of the lubricant. Determination of an optimum or preferred temperature at which to preheat the die so that it will be below the melting of the lubricant to obtain the desired result is within the level of ordinary skill in the art and would have been obvious.

While Inculet et al does not specifically teach the ejection pressure as recited in instant claims 18-22, it would have been obvious to one of ordinary skill in the art to determine the ejection pressure to be applied to the compacted product produced by the method of Inculet et al in view Cadle et al. The ejection pressure as determined by one skilled in the art is expected to be substantially the same as recited in these claims since the green compact is produced by the method which is made obvious over Inculet et al in view of Cadle et al.

6. Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inculet et al. in view of Cadle et al. as applied to claim 1 above, and further in view of Koenig et al.

The differences between Inculet in view of Cadle et al are that Inculet et al in view of Cadle et al. does not teach dispersion of lubricant in water containing surfactant as recited in instant claims 4 and 5.

Koenig et al teaches aqueous dispersions generally comprise the metal soap, i.e., insoluble metal salts of organic acid, water and dispersing agents for the metal soap, and that the dispersing agent is generally a surfactant or mixture of surfactants (col. 1, lines 9-15).

Therefore, it would have been obvious to one of ordinary skill in the art to have utilized dispersion agent as taught by Koenig et al in the process of making aqueous dispersion of lubricant of Inculet et al in view Cadle et al., since the use of water as taught by Koenig et al facilitate the dispersion of the metal salts of higher fatty acid of Inculet et al. in view of Cadle et al.

7. Claims 1-3 and 7-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuchida et al. (US 6,344,169) in view of Cadle (US 6,190,605).

Tsuchida et al. discloses a method for compacting powder comprising packing powders for powder metallurgy formulated with a lubricant in a compacting die whose inner wall surfaces were applied with a lubricant and subjecting the powders to warm or hot compaction, wherein the powders contain the lubricant in an amount of 0.2% or less based on the total of the powders and the lubricant (abstract and col. 2, lines 46-55). The lubricant to be mixed with the powders and to be applied onto the inner wall surfaces of the die can be metal salts of higher fatty acid such as stearic acid and lithium and zinc stearate are taught in col. 4, lines 18-28 and Table A, No. 1a-6a. The lubricant on the wall surfaces disclosed can be applied in a solid state or dissolved or dispersed in a solvent and is applied by a brushed or sprayed onto the surface wall (col. 4, lines 34-39). The powders disclosed can be iron powder as recited in instant claim 10 (col. 3, lines 18-27) and they may be preheated, as recited in instant claim 9, prior to packing of the powders in the compacting die so as to complete the compaction within shorter time (col. 4, lines 41-46). The compacting pressure disclosed is ranging from 5 ton/cm² to 15 ton/cm² or 490 – 1470 MPa (col. 5, line 65 to col. 6, line 9).

Tsuchida et al however does not specifically teach the application of lubricant on a die that is preheated.

Cadle et al teaches a method for achieving an increased length and density product by powder metallurgy where lubricant is sprayed onto temperature controlled mold walls (see abstract). The mold walls as disclosed was preheated to a temperature

Art Unit: 1742

between the softening point and melting points of the lubricant before spraying with the lubricant (col. 3, line 55-62). Cadle et al also teaches wet spraying, i.e., spraying dispersion solution of lubricant onto a heated die wall (col. 3, lines 16-21).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the lubricated die of Tsuchida et al be formed by spraying the lubricant onto the inner wall of the die whose surfaces have been preheated as taught by Cadle et al. since doing this would lead to the consistency of the product and/or product being produced in shorter run as taught by Cadle et al.

In view of Cadle et al teachings, it would also be obvious to preheat the inner wall surfaces of the die of Tsuchida et al to a temperature below the melting point of either zinc or lithium stearate lubricant which are 126 C and 216 C, respectively. Determination of an optimum or preferred temperature at which to preheat the die to obtain the desired result is within the level of ordinary skill in the art and would have been obvious.

While Tsuchida et al does not specifically teach the ejection pressure as recited in instant claims 18-22, it would have been obvious to one of ordinary skill in the art to determine the ejection pressure to be applied to the compacted product produced by the method of Tsuchida et al in view Cadle et al. The ejection pressure as determined by one skilled in the art is expected to be substantially the same as recited in these claims since the green compact is produced by the method which is made obvious over Tsuchida et al in view of Cadle et al.

It appears the claimed property is material property. Consequently, the properties as recited in the instant claims would have inherently possessed by the teachings of the cited references. Therefore, the burden is on the applicant to prove that the product of the prior art does not necessarily or inherently possess characteristics attributed to the claimed product. In re Spade, 911 F.2d 705, 708, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990), In re Best, 195 USPQ 430 and MPEP § 2112.01.

8. Claims 4-6 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuchida et al in view of Cadle as applied to claim 1 and 17 above, and further in view of Koenig et al and CA 2,156,872.

The differences between Tsuchida in view of Cadle et al are that Tsuchida et al in view of Cadle et al. does not teach dispersion of lubricant in water and surfactant as recited in instant claims 4 and 5 and the particle size of the lubricant as recited in instant claims 6 and 23.

Koenig et al teaches aqueous dispersions generally comprise the metal soap, i.e., insoluble metal salts of organic acid, water and dispersing agents for the metal soap, and that the dispersing agent is generally a surfactant or mixture of surfactants (col. 1, lines 9-15).

Therefore, it would have been obvious to one of ordinary skill in the art to have utilized dispersion agent as taught by Koenig in the process of making aqueous dispersion of lubricant of Tsuchida et al in view Cadle et al., since the use of dispersing agent as taught by Koenig et al is expected to facilitate the dispersion of the metal salts of higher fatty acid of Tsuchida et al. in view of Cadle et al.


Regarding claims 6 and 23, Inculet et al. teaches that solid lubricant employed in coating the wall surfaces of the die can have particle size of 15 microns or less (page 6, lines 8-15).

Based on this teaching, it would have been obvious to one of ordinary skill in the art to have utilized solid lubricant having particle size as taught by Inculet et al. in the dispersion of Tsuchida et al in view of Cadle et al. because the use of lubricant having particle size taught by Inculet et al would lead to the success of the coating of the lubricant taught by Tsuchida et al in view of Cadle et al. on the wall surfaces.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ngoclan T. Mai whose telephone number is (571) 272-1246. The examiner can normally be reached on 9:30-6:00 PM Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


NGOCLAN MAI
PRIMARY EXAMINER